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LETTER TO THE EDITOR

Impact of Race on the Association between Diabetes and HCV

TO THE EDITOR: Thulavath and John recently reported a higher prevalence of diabetes mellitus (DM) among individuals with hepatitis C virus (HCV)-related cirrhosis compared to individuals with cirrhosis from other causes (1). The observed association was due to a higher proportion of blacks, with a higher DM prevalence, among the HCV-infected cirrhotics. After taking into account the effect of race and other confounders, HCV infection was not associated with either prevalent DM or post-transplant development of DM. While the study design aimed to control for potential confounding factors such as age, gender, and severity of liver disease, the authors did not match by race. The accompanying editorial by Mason and Nair mistakenly reports the study as comparing race-matched study groups when matching was by age and gender only, and interprets the study as supportive of DM being an extrahepatic manifestation of HCV (2).

In an ethnically more homogenous population, we assessed HCV prevalence and history of DM among hospitalized Caucasian patients recruited as controls in a lymphoma case-control study at four centers in Spain (3). Subjects with diverse admitting diagnoses were included: most commonly, ocular disease (14%), circulatory system disease (11%), injuries and poisonings (10%), surgical procedures (9%), and urologic disease (7%). Subjects with severe immunosuppression, systemic infections, or cancer were excluded. Of 655 eligible subjects, 92% were included in the study. DM diagnosis was made by self-report of physician diagnosis. HCV status was defined based on the presence of antibodies to HCV on a third-generation ELISA (Abbott Laboratories, Germany) and/or detectable HCV RNA by Amplicor HCV version 2.0 (Roche, Basel, Switzerland).

Of 604 subjects with available data, 97 (16.1%) were diagnosed as DM and 17 (2.8%) were HCV positive. No difference in the prevalence of HCV infection was observed by DM status (Table 1). The three HCV-positive DM subjects had an average age of 73 yr, had been diagnosed with DM more that 14 yr prior, and two of them were women. While a higher proportion of DM patients were obese (BMI > 29) compared to non-DM (26.0% *vs* 17.6%, $p = 0.08$), no difference in BMI was observed by HCV status.

Table 1. Prevalence of Antibodies to HCV by Diagnosis of Diabetes Mellitus Among Control Population from EPI-Lymph Case-Control Study in Spain

	Anti-HCV Neg		Anti-HCV Pos		All subjects	
	No.	%	No.	%	No.	%
Nondiabetic	493	97.2	14	2.8	507	83.9
Diabetic	94	96.9	3	3.1	97	16.1

Note: Fisher's exact test for difference in proportion anti-HCV positive, $p = 0.744$.

The epidemiologic evidence for an association between HCV and DM is mounting, primarily from specialty clinic-based studies involving liver disease or DM patients [reviewed in (2)]. Additionally, cross-sectional data from a large population-based study supported the association (4). Prior studies of HCV and DM with a negative association have tended to come from homogenous study populations (5–7). Recently, in a population-based prospective study, the development of DM increased among HCV-positive persons, but only among older and more obese higher-risk individuals (8). Unfortunately, this study was not able to control for race.

The development of DM in liver disease patients likely represents a complex interplay between liver fibrosis, obesity, race, and perhaps, HCV infection. It is well recognized that rates of obesity, of DM, and of HCV are notably higher among blacks. We feel that Thulavath and John's report highlights the need for further large-scale studies of HCV and DM with the incorporation of strict controlling for race as a requisite factor in future studies.

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